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10/566,876	02/02/2006	Louis Robert Litwin	PU030189	9563

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EXAMINER	
BALAOING, ARIEL A	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,876	LITWIN ET AL.	
	Examiner	Art Unit	
	ARIEL BALAOING	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 March 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 02/03/2009 have been fully considered but they are not persuasive.

Regarding the applicant's arguments that "*The Examiner states that Chang describes Applicants' claimed requirement of acquiring frame synchronization is such a way that the first synchronization channel is used to adjust for a frequency offset. In particular, the Examiner states that the "frequency offset is compensated for within the VCO using primary and secondary synchronization channels". Respectfully, the Examiner is over-stating the description in Chang.*

Chang is clear. The frequency offset estimation is a result of the Phase IV verification, e.g., see signal 353 in Figure 3 of Chang. Indeed,

[i]n order to reduce errors caused by the difference in frequency between the transmitted signal and a local reference, the Phase IV verification circuit 350 performs a frequency correction, the result of which is a coarse frequency offset estimation signal on line 353. Chang, paragraph 041, p. 3, emphasis added.

Thus, the phase I acquisition circuit 320 of Chang that performs primary synchronization has nothing to do with the frequency correction." (see page 7 of the remarks); the examiner respectfully disagrees.

As recited, claim 1 requires receiving of a wireless signal, processing a first channel to acquire slot synchronization, processing a second channel to acquire frame synchronization, in such a way that the first synchronization channel is used to adjust

for a frequency offset. As disclosed in paragraph 11 of Chang, a first and second synchronization channel are used for to determine slot and frame synchronization. This information is further used to determine the frequency correction offset of a received signal of Chang (see **360** – Figure 3), and therefore the first channel is used in such a way to determine a frequency offset. Furthermore, paragraph 41 discloses details of both a coarse and fine frequency offset correction of a received signal which is also based on Phase I-IV of Chang.

2. Regarding claim 6, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Froehling is used to show adjusting for a frequency offset while acquiring frame synchronization.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by CHANG et al (US 2003/0043768 A1).

Regarding claim 1, CHANG discloses a method for use in a wireless receiver (abstract), comprising: receiving a wireless signal (abstract); processing a first synchronization channel [**primary synchronization channel**] of the received wireless signal to acquire slot synchronization (paragraph 11, 14, 37; phase 1 acquisition); and processing a second synchronization channel [**secondary synchronization channel**] of the received wireless signal to acquire frame synchronization in such a way that the first synchronization channel is used to adjust for a frequency offset (Figure 3, **330, 360** paragraph 11, 14, 38, 41, 43-44; frequency offset is compensated for within the VCO using primary and secondary synchronization channels).

Regarding claim 2, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. CHANG further discloses wherein the first synchronization channel is a primary synchronization subchannel (PSCH) and the second synchronization channel is a secondary synchronization subchannel (SSCH) of a universal mobile telephone system (UMTS) [**WCDMA**] (paragraph 11, 14, 37, 38; UMTS is also referred to as WCDMA).

Regarding claim 3, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. CHANG further discloses wherein the step of processing a second synchronization channel includes the steps of: processing the first synchronization channel to estimate a frequency offset in the received wireless signal (paragraph 43, 44); and adjusting a clock of the wireless receiver to compensate for the estimated frequency offset (paragraph 43, 44; fine and coarse compensation of the timing element based on frequency estimation).

Regarding claim 4, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. CHANG further discloses wherein the step of processing the first synchronization channel to estimate a frequency offset includes: rotating signals [**symbol/code**] associated with the first synchronization channel through a plurality of frequency offsets (paragraph 53-57; frequency estimation determined using plurality of codes); determining a corresponding plurality of correlation peaks for each of the rotated signals at each of the plurality of frequency offsets (paragraph 53-57; peak search performed); selecting at least one of the plurality of correlation peaks such that a magnitude of the selected correlation peak is at least as large as magnitudes of the remaining plurality of correlation peaks (paragraph 53-57, 62; maximum value integrator used for correlation of received signal); and using at least the corresponding one of the plurality of frequency offsets associated with the selected correlation peak as the estimated frequency offset (paragraph 53-58, 62).

Regarding claim 5, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. CHANG further discloses wherein the step of processing a second synchronization channel includes the steps of: processing the first synchronization channel to provide a coarse estimate of the frequency offset in the received wireless signal (paragraph 41-44, 81); processing the first synchronization channel to further refine the coarse estimate of the frequency offset to provide a final estimate of frequency offset (paragraph 41-44, 85, 86); and adjusting a clock of the wireless receiver to compensate for the final estimate of the frequency offset (paragraph 86-88).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over CHANG et al (US 2003/0043768 A1) in view of FROEHLING et al (US 6,560,298).

Regarding claim 6, CHANG discloses a method for use in a Universal Mobile Telephone System (UMTS) based wireless receiver (abstract), comprising: acquiring slot synchronization from a primary synchronization signal of a received wireless signal (paragraph 11, 14, 37; phase I); and after acquiring slot synchronization, using the primary synchronization signal to adjust for a frequency offset and acquiring frame synchronization from a secondary synchronization signal of the received wireless signal (paragraph 11, 14, 38, 41; phase II occurs subsequent to slot synchronization). However, CHANG does not expressly disclose adjusting for a frequency offset while acquiring frame synchronization. In the same field of endeavor, FROEHING discloses adjusting for a frequency offset while acquiring frame synchronization (abstract; figure 14; col. 13, line 57-col. 14, line 16; frame synchronization takes place concurrently to the automatic frequency control). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify CHANG to include the teachings of FROEHING, since FROEHING states that such a modification would shorten the time needed to acquire data frame synchronization (see col. 3, line 15-20).

Regarding claim 7, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. CHANG further discloses wherein the step of processing a the primary synchronization channel includes the steps of: processing the first synchronization channel to estimate a frequency offset in the received wireless signal (paragraph 43, 44); and adjusting a clock of the wireless receiver to compensate for the estimated frequency offset (paragraph 43, 44; fine and coarse compensation of the timing element based on frequency estimation).

Regarding claim 8, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of CHANG and FROEHING further discloses wherein the step of processing the first synchronization channel to estimate a frequency offset includes: rotating signals [**symbol/code**] associated with the first synchronization channel through a plurality of frequency offsets (CHANG - paragraph 53-57; frequency estimation determined using plurality of codes; FROEHING - col. 14, line 17-29); determining a corresponding plurality of correlation peaks for each of the rotated signals at each of the plurality of frequency offsets (CHANG - paragraph 53-57; peak search performed; FROEHING - col. 14, line 17-29); selecting at least one of the plurality of correlation peaks such that a magnitude of the selected correlation peak is at least as large as magnitudes of the remaining plurality of correlation peaks (CHANG - paragraph 53-57, 62; maximum value integrator used for correlation of received signal; FROEHING - col. 14, line 17-29); and using at least the corresponding one of the plurality of frequency offsets associated with the selected correlation peak as

the estimated frequency offset (CHANG - paragraph 53-58, 62; FROEHING - col. 14, line 17-29; plurality of frequency offsets correlated using symbol-wise correlation).

Regarding claim 9, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. CHANG further discloses wherein the step of processing a second synchronization channel includes the steps of: processing the first synchronization channel to provide a coarse estimate of the frequency offset in the received wireless signal (paragraph 41-44, 81); processing the first synchronization channel to further refine the coarse estimate of the frequency offset to provide a final estimate of frequency offset (paragraph 41-44, 85, 86); and adjusting a clock of the wireless receiver to compensate for the final estimate of the frequency offset (paragraph 86-88).

Regarding claim 10, CHANG discloses Wireless equipment comprising: a front end for receiving a wireless signal and for providing a stream of received samples (Figure 3; paragraph 37, 38); a primary synchronization element operative on the received samples for acquiring slot synchronization to a primary synchronization signal of the received wireless signal and for further processing the primary synchronization signal subsequent to slot synchronization for estimating frequency offset (paragraph 11, 14, 37; phase 1 acquisition); a secondary synchronization element operative on the received samples for acquiring frame synchronization to a secondary synchronization signal of the received wireless signal (paragraph 11, 14, 38, 41; phase II occurs subsequent to slot synchronization); and a processor, responsive to the further processing of the primary synchronization signal by the primary synchronization

element, to adjust for a frequency offset in the wireless equipment (Figure 3, 5; paragraph 11, 14, 38, 41, 43-44; frequency offset is compensated for within the VCO using primary and secondary synchronization channels). However, CHANG does not expressly disclose processing a first synchronization element during processing of a second synchronization element. In the same field of endeavor, FROEHING discloses processing a first synchronization element (frequency offset and control) during processing of a second synchronization element (frame synchronization) (abstract; figure 14; col. 13, line 57-col. 14, line 16; frame synchronization takes place concurrently to the automatic frequency control). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify CHANG to include the teachings of FROEHING, since FROEHING states that such a modification would shorten the time needed to acquire data frame synchronization (see col. 3, line 15-20).

Regarding claim 11, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of CHANG and FROEHING further discloses wherein, subsequent to slot synchronization, the primary synchronization element continues to process the primary synchronization signal of the received wireless signal simultaneously with processing of the received wireless signal by the secondary synchronization element (FROEHING - col. 13, line 57-col. 14, line 16).

Regarding claim 12, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. CHANG further discloses wherein the primary

synchronization element determines an estimate of the frequency offset in the received wireless signal and the processor adjusts a clock of the wireless equipment to compensate for the estimated frequency offset (paragraph 43, 44; fine and coarse compensation of the timing element based on frequency estimation).

Regarding claim 13, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of CHANG and FROEHING further discloses further including a rotator for rotating the received samples while the secondary synchronization element is acquiring frame synchronization and for applying the rotated received samples to the primary synchronization element, which processes the primary synchronization signal represented therein (CHANG - paragraph 53-59, 62; FROEHING - abstract; figure 14; col. 13, line 57-col. 14, line 16; CHANG discloses rotation of symbols to determine correlation peaks and estimated frequency offsets, while FROEHING discloses frame synchronization takes place concurrently to the automatic frequency control and determination of frequency offset).

Regarding claim 14, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. CHANG further discloses wherein the processor selects a rotation value of the rotator for use as the estimated frequency offset (paragraph 53-58, 62).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARIEL BALAOING whose telephone number is (571)272-7317. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, V. Paul Harper can be reached on (571) 272-7605. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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